

REMARKS

In the present Amendment, Applicants have amended claims 21, 48, and 70 to more appropriately define the invention. Applicants have also canceled claims 60 and 77, without disclaimer or prejudice of the subject matter thereof. Upon entry of this Amendment, claims 21-23, 26, 47, 48, 61-65, 67-75, and 78 are pending.

In the Office Action, the Examiner rejected claims 21-23, 26, 47, 61-65, 68, and 69 under 35 U.S.C. § 102(a) as being anticipated by Applicant's Admitted Prior Art (AAPA); rejected claim 48 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Romankiw (U.S. Patent No. 3,908,194); rejected claims 67, 70-75, and 77 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Kogure et al. (JP 04-153910); and rejected claim 78 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Kogure et al., and in further review of Romankiw. Applicants submit that the rejection of claim 77 is moot in view of the cancellation thereof. Applicants respectfully traverse the rejections of the other claims.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." "The identical invention must be shown in as complete detail as is contained in the . . . claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See M.P.E.P. § 2131, 8th ed., 2001.

Claim 21 of the present application recites a magnetoresistance effect device that includes among other things "a substrate having a main surface; a magnetoresistance effect film formed on the main surface of said substrate and having

a magnetic field detecting portion; a pair of bias magnetic field applying films disposed adjacent to both edge portions of the magnetic field detecting portion, the bias magnetic field applying films having hard magnetic films containing Co as a structural element and having a bi-crystal structure; and an under-layer having a thickness of 5 to 50 nm disposed between the substrate and the hard magnetic layer, the under-layer being composed of an amorphous layer formed on the substrate and a crystal layer formed on the amorphous layer."

Applicants first submit that AAPA fails to teach at least "an under-layer having a thickness of 5 to 50 nm disposed between the substrate and the hard magnetic layer, the under-layer being composed of an amorphous layer formed on the substrate and a crystal layer formed on the amorphous layer," as recited in claim 21.

Moreover, AAPA also fails to teach at least "the bias magnetic field applying films having hard magnetic films containing Co as a structural element and having a bi-crystal structure," as recited in claim 21. In the Office Action, the Examiner alleged that AAPA describes "bias magnetic field applying films . . . having a [bi-crystal] structure." Office Action, pages 2-3. However, Applicants advise that the description in the Background section of the application (page 6, line 24 – page 9, line 15) substantially relates to a magnetic recording medium which has a hard magnetic layer as a surface magnetic recording medium that needs different properties from that of the bias magnetic field applying film of the magnetoresistance effect device, and therefore, at the time the present invention was made, there was no attempt to apply the bi-crystal structure of the hard magnetic film to the bias magnetic field applying film of the MR device.

Thus, claim 21 should be allowable over AAPA, and claims 22-23, 26, 47, 61 should also be allowable at least because of their dependency from allowable base claim 21.

In addition, independent claim 62 recites a magnetoresistance effect device that includes "a substrate having a main surface; a magnetoresistance effect film formed on the main surface of said substrate and having a magnetic field detecting portion; a pair of bias magnetic field applying films disposed adjacent to both edge portions of the magnetic field detecting portion, the bias magnetic field applying films having hard magnetic films containing Co as a structural element and having a bi-crystal structure, the hard magnetic films having a residual magnetization Mr of 650 emu/cc or more."

AAPA fails to teach at least "[a] bias magnetic field applying films having hard magnetic films containing Co as a structural element and having a bi-crystal structure [and a] hard magnetic films having a residual magnetization Mr of 650 emu/cc or more." Therefore, claim 62 and its dependent claims 63-65, 68, 69 should also be allowable.

Applicants also respectfully traverse the rejections under 35 U.S.C. § 103(a), because the Examiner failed to establish a *prima facie* case in each of these rejections.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three

requirements must "be found in the prior art, and not be based on applicant's disclosure." See M.P.E.P. §2143, 8th ed., February 2003.

Regarding the rejection of claim 48 under 35 U.S.C. § 103(a), Applicants note that claim 48 indirectly depends from claim 21, and that, as discussed above, AAPA fails to teach or suggest each and every element of claim 21. Particularly, AAPA fails to teach or suggest at least "the bias magnetic field applying films having hard magnetic films containing Co as a structural element and having a bi-crystal structure; and an under-layer having a thickness of 5 to 50 nm disposed between the substrate and the hard magnetic layer, the under-layer being composed of an amorphous layer formed on the substrate and a crystal layer formed on the amorphous layer," as recited in claim 21. Moreover, Romankiw only teaches a thin film head including a permeable substrate as a first shield and a layer of permeable material thereon as a second shield. Romankiw does not teach or suggest anywhere in its disclosure at least "an under-layer having a thickness of 5 to 50 nm disposed between the substrate and the hard magnetic layer, the under-layer being composed of an amorphous layer formed on the substrate and a crystal layer formed on the amorphous layer," as recited in claim 21. In other words, Romankiw does not overcome the deficiency of AAPA with regard to claim 21. Therefore, claim 21 is patentable over AAPA in view of Romankiw, and claim 48 is also patentable over AAPA in view of Romankiw at least because of its dependency from an allowable base claim.

The Examiner also alleged that Romankiw teaches "a recording head . . . [having] a lower magnetic pole 224 in common with the lower magnetic shield layer 224 of the magnetic head," and that "[i]t would have been obvious to a person having

ordinary skill in the art . . . to provide the reproducing magnetoresistive device of AAPA with a reproducing head." Office Action, page 4. However, Applicants note that, contrary to the Examiner's allegation, claim 48 recites, *inter alia*, "a recording head having a lower record magnetic pole in common with said upper magnetic shield layer of said magnetic head." Emphasis added. At least on this basis, Applicants respectfully traverse the Examiner's allegation of obviousness.

Regarding the rejection of claim 67, AAPA and Kogure et al., taken alone or in combination, fail to teach or suggest each and every element of that claim. First, as discussed above, AAPA fails to teach or suggest at least "[a] hard magnetic films having a residual magnetization Mr of 650 emu/cc or more," as recited in claim 62, from which claim 67 depends. Moreover, Kogure et al. only discloses controlling magnetic layer crystal particles using the underlayers, and is silent with regard to the residual magnetization of the hard magnetic film. See BASIC-ABSTRACT provided by Derwent Information Ltd., a copy of which is attached herewith. Therefore, Kogure et al. does not overcome the deficiency of AAPA, and claim 62 should be patentable over AAPA and Kogure et al.. Claim 67 is also patentable over AAPA and Kogure et al. at least because of its dependency from an allowable base claim.

In rejecting claim 67, the Examiner also alleged that "Kogure et al. shows in figure 1 an amorphous and metal crystal, which is Cr, underlayer. The underlayer has a thickness of 5 to 50 nm." Office Action, page 5. In addition, the Examiner noted that "the boundaries of the thickness have not been set forth in the claims and Kogure et al has at least one layer between 5 to 50 nm." Id., page 5. Applicants disagree with the Examiner. Claim 67 recites, *inter alia*, "wherein an under-layer having a thickness of 5

to 50 nm is disposed between the substrate and the hard magnetic layer, the under-layer being composed of an amorphous layer formed on the substrate and a crystal layer formed on the amorphous layer." Assuming, *arguendo* (which we, of course, would not concede), that the 1st underlayer comprising Ti-Y corresponds to Applicants' claimed "amorphous layer," and the 2nd underlayer comprising Cr metal corresponds to Applicants' claimed "crystal layer," the Examiner may at most argue that Kogure et al.'s 1st underlayer and 2nd underlayer combined correspond to Applicants' claimed under-layer. However, the thickness of Kogure et al.'s 1st underlayer and 2nd underlayer combined is 180 nm, rather than "5 to 50 nm," as recited in claim 67. At least on this basis, Applicants traverse the Examiner's statements.

Regarding the rejection of claims 70-75, Applicants note that independent claim 70 recites, *inter alia*, "an under-layer composed of an amorphous layer and a metal crystal layer formed on the amorphous layer, . . . wherein a thickness of the under-layer is 5 to 50 nm." As discussed above, AAPA and Kogure et al., taken alone or in combination, fail to teach or suggest at least these elements. Therefore, claim 70 and its dependent claims 71-75 should be patentable over AAPA and Kogure et al..

Finally, regarding the rejection of claim 78 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Kogure et al. and Romankiw, Applicants first note that AAPA and Kogure et al., taken alone or in combination, fail to teach or suggest at least "an under-layer composed of an amorphous layer and a metal crystal layer formed on the amorphous layer, . . . wherein a thickness of the under-layer is 5 to 50 nm," as recited in claim 70, from which claim 78 depends. Furthermore, as discussed above, Romankiw also fails to teach or suggest at least "an under-layer composed of an

amorphous layer and a metal crystal layer formed on the amorphous layer, . . . wherein a thickness of the under-layer is 5 to 50 nm." Therefore, claim 78 should be patentable over AAPA in view of Kogure et al. and Romankiw.

The Examiner also alleged that "[i]t would have been obvious . . . to provide the reproducing magnetoresistive device of AAPA as modified by Kogure et al with a reproducing head to form a merged or combined head as taught by Romankiv." Office Action, page 6. For the same reasons already set forth in the above, Applicants respectfully traverse this allegation.

In view of the foregoing remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

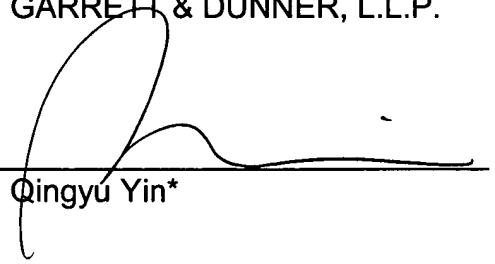
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Respectfully submitted,

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Dated: April 30, 2004

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*With limited recognition under 37 C.F.R. § 10.9(b)

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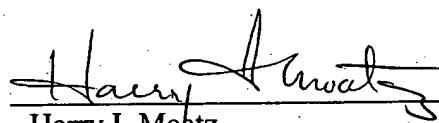
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